

Our Reference: 200308817-1

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appellants:	John R. Moffatt, et al.
Serial Number:	10/672,486
Filing Date:	September 25, 2003
Confirmation No.:	8250
Examiner/Group Art Unit:	Betelhem Shewareged/1794
Title:	PROTECTION OF PRINTED IMAGES FROM GASFADE

APPEAL BRIEF

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Sir:

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I. REAL PARTY IN INTEREST

The real party in interest is Assignee, Hewlett-Packard Development Company, L.P., a limited partnership established under the laws of the State of Texas and having a principal place of business at 11445 Compaq Center Drive W., Houston, Texas 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. RELATED APPEALS AND INTERFERENCES

Appellants and the undersigned attorney are not aware of any appeals or any interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 3, 4, 21-24, 28-30, and 33 are the claims on appeal. See, Appendix.

Claims 3, 4, 21-24, 28-30, and 33 are rejected.

Claims 1, 2, 5-7, 11, 15, 18-20, 25-27, 31, and 32 were cancelled.

Claims 8-10, 12-14, 16, and 17 are withdrawn.

IV. STATUS OF AMENDMENTS

In response to the Final Office Action of October 14, 2009, no amendment pursuant to 37 C.F.R. § 1.116 was filed. However, an amendment pursuant to 37 C.F.R. § 41.33(a) was filed on March 10, 2010 to revise the pending claims to place the application in better form for consideration on appeal.

V. SUMMARY OF CLAIMED SUBJECT MATTER

In this summary of claimed subject matter, all citations are to the specification of United States Patent Application 10/672,486. Further, all citations are illustrative, and support for the cited element may be found elsewhere in the specification.

Independent claim 3:

Independent claim 3 is directed to a print medium having increased resistance to gasfade. The print medium (identified by reference numeral 2 in Fig. 1 of Appellants' application) comprises a melt-coated, discrete, topmost inhibitor layer (identified by reference numeral 4 in Fig. 1 of Appellants' application) on at least one surface of the print medium 2 (see paragraphs [0019] and [0020] of Appellants' application as originally filed). The layer 4 includes at least one odorless sulfur-containing polymer (see paragraphs [0011] and [0025] of Appellants' application as filed). The at least one sulfur-containing polymer has a molecular weight greater than approximately 1000, and is selected from the group consisting of poly(1,4-phenylene sulfide), poly(1,3-phenylene sulfide), and combinations thereof (see paragraphs [0018], [0023], and [0025] of Appellants' application as filed). Further, the print medium 2 comprises a plain paper, a porous print medium, or a swellable print medium (see paragraph [0024] of Appellants' application as filed).

Independent claim 4:

Independent claim 4 is directed to a print medium having increased resistance to gasfade. The print medium (identified by reference numeral 2 in Fig. 1 of Appellants' application) comprises a melt-coated discrete inhibitor layer (identified by reference numeral 4 in Fig. 1) on at least one surface of the print medium 2 (see paragraphs [0019] and [0020] of Appellants' application as originally filed). The layer 4 includes at least one poly(phenylene sulfide) that has a molecular weight greater than approximately 1000 (see paragraphs [0011], [0018], [0023], and [0025] of Appellants' application as filed). The at least one poly(phenylene sulfide) is present at a

concentration from approximately 0.25% by weight per cm^2 of the print medium 2 to approximately 30% by weight per cm^2 of the print medium 2 (see paragraph [0017] of Appellants' application as filed).

Independent claim 21:

Independent claim 21 is also directed to a print medium having increased resistance to gasfade. The print medium (identified by reference numeral 2 in Fig. 1 of Appellants' application) comprises a melt-coated, topmost, discrete inhibitor layer (identified by reference numeral 4 in Fig. 1) on at least one surface of the print medium 2 (see paragraphs [0019] and [0020] of Appellants' application as originally filed). The inhibitor layer 4 includes at least one odorless poly(phenylene sulfide) (see paragraphs [0011] and [0025] of Appellants' application as filed). The at least one poly(phenylene sulfide) has a melting point ranging from approximately 125°C to approximately 400°C and a glass transition temperature ranging from approximately 75°C to approximately 250°C (see paragraph [0016] of Appellant's application as filed). Further, the print medium 2 comprises a plain paper, a porous print medium, or a swellable print medium (see paragraph [0024] of Appellants' application as filed).

Independent claim 28:

Independent claim 28 is directed to a print medium having increased resistance to gasfade. The print medium (identified by reference numeral 2 in Fig. 1 of Appellants' application) comprises a melt-coated, topmost, discrete inhibitor layer (identified by reference numeral 4 in Fig. 1) on at least one surface of the print medium 2 (see paragraphs [0019] and [0020] of Appellants' application as originally filed). The inhibitor layer 4 includes at least one odorless sulfur-containing polymer (see paragraphs [0011] and [0025] of Appellants' application as filed). The at least one sulfur-containing polymer is present in a concentration from approximately 0.25% by weight per cm^2 of the print medium 2 to approximately 30% by weight per cm^2 of the print medium 2 (see paragraph [0017] of Appellants' application as filed). The at least one sulfur-containing

polymer is also selected from the group consisting of poly(1,4-phenylene sulfide), poly(1,3-phenylene sulfide), and combinations thereof (see paragraphs [0018], [0023], and [0025] of Appellants' application as filed). The print medium 2 further comprises a plain paper, a porous print medium, or a swellable print medium (see paragraph [0024] of Appellants' application as filed).

Independent claim 33:

Independent claim 33 is directed to a print medium having increased resistance to gasfade. The print medium (identified by reference numeral 2 in Fig. 1 of Appellants' application) comprises a melt-coated topmost, discrete inhibitor layer (identified by reference numeral 4 in Fig. 1 of Appellants' application) on at least one surface of the print medium 2 (see paragraphs [0019] and [0020] of Appellants' application as originally filed). The inhibitor layer includes at least one odorless sulfur-containing polymer (see paragraphs [0011] and [0025] of Appellants' application as filed). The at least one sulfur-containing polymer is selected from the group consisting of poly(1,4-phenylene sulfide), poly(1,3-phenylene sulfide), and combinations thereof (see paragraphs [0018], [0023], and [0025] of Appellants' application as filed).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants request review of the following grounds of rejection on appeal:

- 1) Whether claims 3, 21, 22, 24, and 33 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,837,036 to Schleicher, et al. (referred to hereinafter as "Schleicher").
- 2) Whether claims 3, 4, 21-24, 28-30, and 33 are unpatentable under 35 U.S.C. § 103(a) as being obvious in view of U.S. Patent Publication No. 2002/0071941 to Tsuchida, et al. (referred to herein as "Tsuchida") and Schleicher.
- 3) Whether claims 4, 21-24, 26, 28-30 and 32 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Schleicher.

VII. ARGUMENTS

The arguments presented hereinbelow address the rejections stated in the Final Office Action dated October 14, 2009. It is submitted, however, that the absence of a reply to a specific rejection, issue or comment in the Final Office Action does not signify agreement with or concession of that rejection, issue or comment. Finally, nothing in the following arguments of this appeal brief should be construed as an intent to concede any issue with regard to any claim, except as specifically stated below.

A. Miscellaneous Matters

The objection of claims 26 and 32 in the Final Office Action of October 14, 2009 has been addressed in its entirety in the Amendment pursuant to 37 C.F.R. § 41.33(a), which was filed March 10, 2010. In this Amendment, claims 26 and 32 were canceled. Appellants submit that the objection to claims 26 and 32 has been traversed and overcome in light of such cancellation.

B. Rejection of claims 3, 21, 22, 24, 26, and 33 under 35 U.S.C. § 102(b) over Schleicher

At the outset, in the Amendment pursuant to 37 C.F.R. § 41.33(a) of March 10, 2010 claim 26 was canceled, and thus the instant 35 U.S.C. § 102(b) rejection of claim 26 is rendered moot.

Further, in the Final Office Action of October 14, 2009, the Examiner asserts that independent claims 3, 21, and 33 are anticipated under 35 U.S.C. § 102(b) in view of Schleicher. In general, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Appellants submit that Schleicher fails to anticipate claims 3, 21, and 33, and those claims depending therefrom, for at least the reasons stated below.

Independent claims 3, 21, and 33 are directed to a print medium having **increased resistance to gasfade** (i.e., the fading of printed images due to atmospheric pollutants, which degrade or decompose the colorants (paragraph [0002] of Appellants' application as filed)). In sharp contrast, Schleicher discloses a process and filter for **removing** organic substances and ozone from gases. At the outset, the aim of the Schleicher disclosure is completely different from that of Appellants' invention as defined in claims 3, 21, and 33, and as such, Appellants submit that the skilled artisan would not look to Schleicher for guidance with regard to a print medium having increased resistance to gasfade.

Additionally, claims 3, 21, and 33 recite, in part and in some form, "**a melt-coated**, topmost, **discrete** inhibitor layer on at least one surface of the print medium" (emphasis added). Schleicher, however, discloses that the coating is applied to the support material in the form of a *solution* (column 3, lines 30-34). At the outset, Appellants submit that applying a solution is clearly *not* the same as a melt-coated, discrete, topmost inhibitor layer.

Further, the method of melting-coating is clearly described in the Declaration pursuant to 37 C.F.R. § 1.132 of Matthew Thornberry filed June 3, 2009. Specifically, when the temperature of poly(phenylene sulfide) (PPS) is raised above its melting point (i.e., 285°C), the polymer behaves as a viscous fluid. In this form, the polymer may then be easily deposited onto the print medium. Upon contacting the medium during the depositing, the polymer cools to a temperature below its melting point, and thereby forms a discrete layer on the print medium surface.

Again, Schleicher discloses that the coatings may be obtained, e.g., by **applying a solution** of the sulfur-containing polymer to a support material. It is submitted that such solution actually *penetrates* into the support material, rather than forming a discrete layer on the top. Such is especially true in cases where the support material is formed from paper or another material commonly used for print media. (See the Declaration of Matthew Thornberry.) Appellants submit that when the polymer solution

penetrates into the support material, a discrete layer *cannot* be formed on the support surface (in sharp contrast to Appellants' pending claims).

It is submitted that the penetration of a polymer solution into the support material (as taught in Schleicher) actually changes the surface chemistry and porosity of, e.g., ink receiving layers established thereon. Such changes may, in some instances, negatively impact print image quality and image resistance to gases such as ozone. (See, again, the Declaration of Matthew Thornberry.)

It is further submitted that the method by which the PPS is applied (as recited in Appellants' pending claims) results in a layer having different physical characteristics from that of the Schleicher reference. Thus, for at least this reason, it is submitted that the recitation of "melt-coated" in Applicants' claims should be given patentable weight.

In the Final Office Action of October 14, 2009, the Examiner points out that Schleicher discloses that the PPS solution may be applied as a *coating*. Turning to the definition of the term "coat" from Merriam-Webster Online Dictionary, the Examiner argues that a coating refers to a layer of one substance covering another. Thus, the Examiner asserted that Schleicher discloses that the PPS solution is coated *onto* the support, and thus meets the limitation of a discrete layer recited in Appellants' pending claims.

Appellants do not disagree with the Examiner's definition of the term "coat" provided above, but submit that the term/Examiner's interpretation thereof is used very loosely in/regard to the Schleicher disclosure. More specifically, the very general definition of the term "coat" given by the Examiner does *not* consider the chemistry of the PPS solution that is applied to the support material. So, even though the term "coating" is used in the Schleicher disclosure, the Declaration of Matthew Thornberry clearly demonstrates that the PPS solution also penetrates into the support material and, thus, a discrete layer (i.e., a separate or distinct layer) cannot be formed.

The Examiner further points out that Appellants' application as filed states that the inhibitor layer may penetrate into the print medium. Appellants submit, however, that such disclosure is pertinent to an *embodiment* not intended to be covered by

Appellants' pending claims. It is submitted that inclusion, into the claims, of the embodiment referred to in Appellants' specification by the Examiner would be improper because it is improper to import limitations from the specification into the claims (see MPEP § 2111.01(II)).

For the reasons stated above, Appellants submit that Schleicher does *not* disclose or suggest that the coating i) is **melt-coated**, and ii) forms a **discrete layer** on the support material (as recited in claims 3, 21, and 33). For at least these reasons, it is submitted that Schleicher *fails* to anticipate claims 3, 21, and 33.

Furthermore, Appellants submit that Schleicher neither discloses nor suggests that the support material includes print media. Thus, Schleicher would *not*, and in fact does *not* disclose that the support material includes a plain paper, a porous print medium, or a swellable print medium (as explicitly recited in independent claims 3 and 21).

For all of the reasons stated above, Appellants submit that Schleicher *fails* to disclose all of the elements of independent claims 3, 21, and 33. As such, it is submitted that Appellants' invention as defined in independent claims 3, 21, and 33, and in those claims depending therefrom, is not anticipated, taught, or rendered obvious by Schleicher, either alone or in combination, and patentably defines over the art of record.

B. Rejection of claims 3, 4, 21-24, 26, 28-30, 32, and 33 under 35 U.S.C. § 103(a) over Tsuchida and Schleicher

Again, in the Amendment pursuant to 37 C.F.R. § 41.33(a) of March 10, 2010, claims 26 and 32 were canceled. Thus, the instant 35 U.S.C. § 103(a) rejection of claims 26 and 32 is rendered moot.

Further, in the Final Office Action of October 14, 2009, the Examiner asserts that independent claims 3, 4, 21, 28, and 33 are rendered obvious under 35 U.S.C. § 103(a) in view of Tsuchida and Schleicher. Appellants respectfully disagree with the Examiner for at least the reasons stated below.

At the outset, obviousness is a question of law based on i) the scope and content of the prior art, ii) ***the differences between the prior art and the claims at issue***, iii) the level of ordinary skill in the art, and iv) objective evidence of non-obviousness (*Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966)). An invention may be obvious if it merely combines "familiar elements according to known methods [to] yield predictable results" (*KSR Int. Co. v. Teleflex Inc., et al.*, 127 S. Ct. 1727; 167 L.Ed.2d 705; 2007 U.S. LEXIS 4745; 75 U.S.L.W. 4289; 82 USPQ2d 1385 (2007)).

A basic requirement to establish a case that a claim is *prima facie* obvious is that ***"the prior art reference (or references when combined) must teach or suggest all the claim limitations"*** (emphasis added; see MPEP § 2143). "In proceeding before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art" (*In re Fritch*, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992)). "If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent" (*In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)).

To reiterate from above, independent claims 3, 21, and 33 recite that the print medium includes a ***melt-coated***, topmost, ***discrete*** inhibitor layer on at least one surface of the print medium. Such is also similarly recited in independent claims 4 and 28.

In sharp contrast, Tsuchida discloses an ink-jet recording sheet coated or impregnated with a coating liquid containing specific compounds disclosed in the reference. In an example, the coating liquid may be used to form an ink-receiving layer. (See paragraph [0031] of Tsuchida.) Tsuchida further states that:

If the compounds of the foregoing formulas (1) to (5) and the salts of the compounds of formulas (3) and (4) are soluble in water, ***an aqueous solution*** thereof is incorporated into a coating liquid for forming an ink-receiving layer or applied onto an ink-receiving layer. On the other hand, if they are less soluble in water, they are finely pulverized in an agitation-pulverization machine such as a ball mill, an

attritor, a sand mill or a colloid mill, *while using water as a dispersion medium*. (Emphasis added; paragraph [0033].)

In view thereof, Appellants submit that the coating liquid of Tsuchida is clearly a *solution*, and such solution may be applied to a substrate to form the recording sheet using coating means such as a bar coater, a blade coater, an air-knife coater, a gravure coater, a die coater or a curtain coater (see paragraph [0042]). It is submitted that none of such coating methods include *melt-coating*.

Further, given the fact that the Examiner turned to Schleicher to teach PPS as an example of the sulfur component, Appellants submit that the explanation recited in the Declaration of Matthew Thornberry may also be applied to the instant 35 U.S.C. § 103(a) rejection. To briefly reiterate, a *solution* containing PPS would penetrate into the substrate when applied thereto, and a discrete layer *cannot* be formed (in sharp contrast to Appellants' pending claims).

For the reasons stated above, Appellants submit that the Tsuchida and Schleicher references, when combined, *fail* to teach or suggest all of the elements of claims 3, 4, 21, 28, and 33. More specifically, the combination *fails* to teach or suggest forming a melt-coated topmost discrete inhibitor layer on at least one surface of the print medium. Appellants submit that the Examiner has *failed* to establish a *prima facie* case of obviousness and, thus, claims 3, 4, 21, 28, and 33, and those claims depending therefrom, are not rendered obvious under 35 U.S.C. § 103(a).

C. Rejection of claims 4, 21-24, 26, 28-30 and 32 under 35 U.S.C. § 103(a) over Schleicher

Yet again, claims 26 and 32 were canceled in the Amendment pursuant to 37 C.F.R. § 41.33(a) and, thus, the instant rejection of claims 26 and 32 is rendered moot.

Further, Appellants herein reiterate all of the arguments set forth above in conjunction with the rejection of claims 3, 21, and 33 under 35 U.S.C. § 102(b) over Schleicher, and submit that Schleicher does *not* teach, disclose or suggest a melt-

coated, topmost, discrete inhibitor layer on at least one surface of the print medium. Appellants therefore submit that Schleicher does *not* disclose all of the elements of claims 4, 21, and 28 and, thus, the Examiner has also *failed* to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

VIII. CONCLUSION

The Appellants respectfully submit that claims 3, 4, 21-24, 28-30, and 33 as currently pending fully satisfy the requirements of 35 U.S.C. §§ 102, 103 and 112. Accordingly, Appellants respectfully request that the Board of Patent Appeals and Interferences find for the Appellants and reverse the rejection of each of: Appellants' claims 3, 21, 22, 24, and 33 under 35 U.S.C. § 102(b) as being anticipated by Schleicher; Appellants' claims 3, 4, 21-24, 28-30, and 33 under 35 U.S.C. § 103(a) as being unpatentable over Tsuchida and Schleicher; and Appellants' claims 4, 21-24, and 28-30 under 35 U.S.C. § 103(a) as being unpatentable over Schleicher. In view of the foregoing, favorable consideration and passage to issue of the present application is respectfully requested.

Respectfully submitted,

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IX. CLAIMS APPENDIX

3. (Previously presented) A print medium having increased resistance to gasfade, comprising:

a melt-coated, discrete, topmost inhibitor layer on at least one surface of the print medium, the layer including at least one odorless sulfur-containing polymer, wherein the at least one polymer has a molecular weight greater than approximately 1000, wherein the at least one polymer is selected from the group consisting of poly(1,4-phenylene sulfide), poly(1,3-phenylene sulfide), and combinations thereof, and wherein the print medium comprises a plain paper, a porous print medium, or a swellable print medium.

4. (Previously presented) A print medium having increased resistance to gasfade, comprising:

a melt-coated discrete inhibitor layer on at least one surface of the print medium, the layer including at least one poly(phenylene sulfide), wherein the at least one poly(phenylene sulfide) has a molecular weight greater than approximately 1000, and wherein the at least one poly(phenylene sulfide) is present at a concentration from approximately 0.25% by weight per cm^2 of the print medium to approximately 30% by weight per cm^2 of the print medium.

21. (Previously presented) A print medium having increased resistance to gasfade, comprising:

a melt-coated, topmost, discrete inhibitor layer on at least one surface of the print medium, including at least one odorless poly(phenylene sulfide);

wherein the at least one poly(phenylene sulfide) has a melting point ranging from approximately 125°C to approximately 400°C and a glass transition temperature ranging from approximately 75°C to approximately 250°C, and wherein the print medium comprises a plain paper, a porous print medium, or a swellable print medium.

22. (Previously presented) The print medium of claim 21, wherein the at least one odorless poly(phenylene sulfide) is selected from the group consisting of poly(1,4-phenylene sulfide), poly(1,3-phenylene sulfide), and combinations thereof.

23. (Previously presented) The print medium of claim 21, wherein the at least one odorless poly(phenylene sulfide) is present in a concentration from approximately 0.25% by weight per cm² of the print medium to approximately 30% by weight per cm² of the print medium.

24. (Previously presented) The print medium of claim 21, wherein the at least one odorless poly(phenylene sulfide) has a molecular weight greater than approximately 1000.

28. (Previously presented) A print medium having increased resistance to gasfade, comprising:

a melt-coated topmost, discrete, inhibitor layer on at least one surface of the print medium, the layer including an at least one odorless sulfur-containing polymer;

wherein the at least one polymer is present in a concentration from approximately 0.25% by weight per cm^2 of the print medium to approximately 30% by weight per cm^2 of the print medium; wherein the at least one polymer is selected from the group consisting of poly(1,4- phenylene sulfide), poly(1,3-phenylene sulfide), and combinations thereof; and wherein the print medium comprises a plain paper, a porous print medium, or a swellable print medium.

29. (Previously presented) The print medium of claim 28, wherein the at least one polymer has a melting point ranging from approximately 125°C to approximately 400°C and a glass transition temperature ranging from approximately 75°C to approximately 250°C.

30. (Previously presented) The print medium of claim 28, wherein the at least one polymer has a molecular weight greater than approximately 1000.

33. (Previously presented) A print medium having increased resistance to gasfade, comprising:

a melt-coated topmost, discrete inhibitor layer on at least one surface of the print medium, the layer including at least one odorless sulfur-containing polymer, the at

least one polymer being selected from the group consisting of poly(l,4-phenylene sulfide), poly(l,3- phenylene sulfide), and combinations thereof.

X. EVIDENCE APPENDIX

1. Declaration pursuant to 37 C.F.R. § 1.132 of Matthew Thornberry filed June 3, 2009.

XI. RELATED PROCEEDINGS APPENDIX

None.